PORTABLE ELECTRONIC APPARATUS

FIELD OF THE INVENTION

The present invention relates to a portable electronic apparatus having a display and user input means.

BACKGROUND OF THE INVENTION

Known portable or "lap top" computers and personal organizer generally comprise two portions hinged together so that the apparatus can be opened and closed in the manner of a book. A keyboard and a display are located on the inside faces of respective portions.

This arrangement has the disadvantage that the apparatus must be large to accommodate both the display and the keyboard in the same plane when in use.

It is an aim of the present invention to overcome this problem.

SUMMARY OF THE INVENTION

According to the present invention, there is provided a portable electronic apparatus having a substantially planar body portion, a display and a user input means disposed back-to-back on opposite sides of body portion, the user input means comprising a plurality of manually operable elements arranged in at least one row, each row being on a respective curve that, when the apparatus is oriented for normal use, encloses a corner region of the body. Consequently, the apparatus need only be big enough to accommodate the larger of the display and the user input means. The curve on which the manually operable elements is arranged for enabling the manually operable elements to be reached without repositioning of a user's hand.

A portable electronic apparatus according to the present invention may be a computer. However, the present invention is more generally applicable to apparatus including processing means, such as a microprocessor. For instance, the present invention may be applied to mobile telephone apparatus or combined mobile telephone and computer apparatus.

Preferably, an apparatus according to the present invention comprises first and second body portions hinged together such that the apparatus can be opened and closed in the manner of a book, the display panel being located at the inside face of one of said portions and the user input means being located at an outside face of one of said portions. Conveniently, the user input means may be distributed between the body portion.

Preferably, the display panel extends over both portions. This may be achieved by employing a flexible display device or by constructing the panel in two parts which can move into abutment when the device is opened.

In an alternative embodiment, a display panel is located on the inside face of each said portion. Such an arrangement is particularly suited to use in an electronic book apparatus. Such an apparatus advantageously includes means for reading from a data carrier, e.g. a CD-ROM. The text of the "book" can then be displayed as two facing pages in the manner of a conventional paper book.

Preferably, the or each display panel comprises a light emitting polymer display device.

The user input means may comprise a keyboard means. Conveniently, the keyboard means will comprise a membrane keyboard. However, other keyboard structures may be used as appropriate. For instance, a chord keyboard may be provided.

According to the present invention, there is also provided a portable electronic apparatus comprising first and second body portions and a hinge joining the first and second body portions together such that the apparatus can be opened and closed in the manner of a book, and a display panel, the display panel being configured to extend over the inside faces of said portions and across the hinge when the device is open.

According to the present invention, there is further provided a manually operable input device comprising a plurality of tilt switches, wherein a plurality of different characters are represented by the making of respective contacts of said switches.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a first side view of a first embodiment of the present invention in its closed configuration;

FIG. **2** is a second side view of the apparatus of FIG. **1**;

FIG. **3** shows the inside faces of the apparatus of FIG. **1** in its open configuration;

FIG. **4** is a top view of the apparatus of FIG. **1**;

FIG. **5** shows the inside faces of a second embodiment of the present invention;

FIG. **6** is a top view of the apparatus of FIG. **5**;

FIG. **7** is a sectional view of one half of the apparatus of FIG. **5** with the display panel portion retracted;

FIG. **8** is a detailed view of the region circled in FIG. **7** but with the display panel portion extended;

FIG. **9** is a first side view of a third embodiment of the present invention in its closed configuration;

FIG. **10** is a second side view of the apparatus of FIG. **9**;

FIG. **11** is a top view of the apparatus of FIG. **9** in its closed configuration;

FIG. **12** is a bottom view of the apparatus of FIG. **9** in its open configuration;

FIG. **13** shows the inside faces of the apparatus of FIG. **9**;

FIG. **14** is a front view of a fourth embodiment of the present invention;

FIG. **15** is a back view of the apparatus of FIG. **14**.

FIG. **16** is a back view of a fifth embodiment of the present invention in its open configuration;

FIG. **17** is a side view of the apparatus of FIG. **16**; and

FIG. **18** is a back view of a sixth embodiment of the present invention in its open configuration.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings.

Referring to FIGS. **1** to **4**, a first embodiment of the present invention comprises first and second body portions **1**, **2**. The body portions **1**, **2** are rectangular in both plan and section and are coupled by a hinge **3** such that the apparatus may be opened and closed in the manner of a book. First and second co-operating catch elements **4***a*, **4***b* are located on respective body portions **1**, **2**, midway along the faces remote from the hinge **3**. The catch elements **4***a*, **4***b* cooperate to hold the apparatus in its closed configuration.

A first LCD panel **5** is located at the inside face of the first body portion **1** and a second LCD panel **6** is similarly located at the second body portion **2**. The keys **7**, **8** of a